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THE CANADA
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APRIL, 1895.

LITERATURE AND ART.

BY PROFESSOR WM. CLARK, M.A., D.C.L.

IT might seem unnecessary to remark, at the outset, that the address which I have the privilege of delivering is not a *Concio ad Clerum*, but a *Concio ad populum*—that the speaker makes no pretension of instructing or even criticising the artist; but simply wishes to point out some connexions between Literature and Art—in fact and theory; that is to say, as these connexions are illustrated in the history of mankind, and as they are disclosed in the identity or similarity of the principles upon which Literature and Art alike depend.

But here, at once, the very title which has been given to this address may be called in question, as involving what logicians would call a cross division. Can we, in short, draw a sharp line of division between Literature and Art? Does not poetry, for example, belong to each Province? Is it not at once the flower of Literature and the consummation of Art?

We might at once acquiesce in this criticism, pleading only that, in the unity and complexity of human life, there can be no absolute separation of any one Province from another, that most subjects of interest can be arranged under different heads, and that practically we all understand what we mean by this division.

But perhaps it may be as well, before going further, to ask a little more particularly what we mean by these terms, Literature and Art, and to point out more exactly the nature of our own undertaking. "By Literature," says Dean Stanley, "I mean those great works, that rise above professional or common place uses, and take possession of the minds of a whole nation or a whole age." Admirable, no doubt, like so much that came from the Dean, but also like much of his work in its vagueness. "Literature," says Carlyle, "is the thought of thinking souls," and, altho' this is not quite precise, it brings out the contrast or connexion which I principally thought of—namely that the *thought* of a period or a people is closely related to the art of the same. Here is a definition which is at once precise and comprehensive: "The class of writings in which beauty of style or expression is a characteristic feature, as poetry, romance, history, biography, essays: in contradistinction to scientific works, or those written expressly to impart knowledge." We should perhaps hesitate to comprehend history in this class, since here the mere style is of so much less consequence than the accuracy of the facts and the judgments.

Turning to *Art*. Art, says one, is the embodiment of beautiful thought in sensuous forms, as in marble or speech—surely we may add colour. Art, says another, is the external manifestation of the idea, the revelation of the invisible reality through the senses. "While," says Mr. Ruskin, "manufacture is the work of hands only, *art* is the work of the whole spirit of man." And again: "The *fine art* is that in which the hand, the head, and the heart of man go together." The fine arts have been classified as the free, and the dependent; the *free*, whose object is to create form for its own sake, embracing painting, engraving, sculpture, music, and poetry, and the *dependent*, whose object is to create form that shall minister to some utility, embracing architecture and other applications of the principles of artistic construction or arrangement." According to every definition or description of these terms, poetry will fall into the one class or the other. But perhaps we have enough of definition.

To the beautiful, the production of which is the special function of art, says Hegel* there always belong two factors, the thought and the material, but both are inseparably together; the material expresses nothing but the thought that animates and illuminates it, and of this thought it is only the external manifestation. The various forms of art depend on the various combinations that take place between the matter and the form. There are, he says, three forms of art, the symbolical, the classical, and the romantic. In the first of these, the *symbolical* matter predominates; in the second, the *classical*, form and matter are mutually commensurate; in the *romantic*, spirit predominates and the matter is reduced to a mere

sign and show through which the spirit breaks forth. And these principles are illustrated in the individual arts, in which, however, the differences depend greatly on the difference of material.

(1) The beginning of Art, he says, is *Architecture*. It belongs to the symbolical form, the sensuous material being greatly in excess. The material is stone; hence the character that belongs to it of massiveness, silent gravity, of oriental sublimity.

(2) Next comes *Sculpture*, still, he says, in subjection to a stiff and unyielding material, but an advance nevertheless from the inorganic to the organic. In representing body, this building of the soul, in its beauty and purity, the material completely disappears into the ideal; not a remnant of the crasser element is left that is not in service to the idea. Nevertheless, the life of the soul, feeling, mood, glance—these are beyond sculpture. (3) The *romantic* art, κατ' ἐξοχήν, *Painting*, alone is equal to them. Here we are reminded of the remarks of Sir Joshua Reynolds, his famous Discourses on Painting. "Sculpture," he says (Disc. 10), "is an art of much more simplicity and uniformity than painting; it cannot with propriety and the best effect be applied to many subjects. The object of its pursuit may be comprised in two words—Form and Character; and those qualities are presented to us but in one manner, or in one style only; whereas the powers of painting, as they are more various and extensive, so they are exhibited in as great a variety of manners. The grave and austere character of sculpture requires the utmost degree of formality in composition; picturesque contrasts have here no place; everything is carefully weighed and measured, one side making almost an exact equipoise to the other: a child is not a proper bal-

*See Schwegler's History of Philosophy.

ance to a full grown figure, nor is a figure sitting or stooping a companion to an upright figure.

(3) *Painting*, according to Hegel, is the *great romantic* art. Its medium is no longer, like that of Sculpture, a coarse material substrate, but the coloured plane, the spiritual play of light; it produces only the show of solid dimension. Hence, it is capable of expressing the whole scale of feelings, moods, and actions—actions full of dramatic movement.

(4) Of *Music* he speaks as the perfect sublation of space. Its material is tone (sound), the vibrations of a sonorous body. It leaves therefore the field of sensuous perception, and acts exclusively upon inner emotion. Its sphere is the breast of the sensitive soul. Music is the most subjective of arts.*

(5) But, he says, it is in *Poetry* that the tongue of art is loosed at last. Poetry is the *literary art* and has the power of universal expression. Its material is not sound, merely, but sound as speech, sound as the word, the sign of an idea, the expression of reason. But poetry does not shape this material at random, but only according to certain rhythmical and musical laws of verse. All the other arts unite in poetry—the *plastic* arts in the *epic*, representing in extended narrative the picturesque history of nations; *music* in *lyric* poetry, the expression of some inner condition of soul; the unity of both in the *drama* which exhibits the conflicts between individuals acting out of directly opposite interests.

In bringing together the subjects of literature and art, we are narrowing somewhat the provinces of both, and are thinking rather of literature as the product of thought, and art as embod-

ied in works of beauty; and the connexion which we wish to establish—or, rather, which we recognize as established and indissoluble—is one of two kinds. In the first place, we find that periods of great and earnest activity of thought precede or accompany periods of excellence in art. In the second place the principles of excellence in literature and art are substantially identical or analogical.*

It is a great error, as has been long ago remarked, to suppose that taste and genius in art have nothing to do with reason. We shall be sure to find that whenever a people is degraded in intelligence or morality, there is a corresponding deterioration in art; and that every great period of art has been preceded or accompanied by great intellectual activity, and not unfrequently by a revival in religion. One or two eras in the history of mankind may be selected in illustration of these statements

We can learn nothing on this subject from the Hebrew history, since painting and sculpture seem to have been interdicted to the Israelites; but ancient monuments of Egypt and Assyria are eminently worthy of attention, and we know that they belong to the heroic age of those great peoples.

It is, however, of Greece that we naturally think when we turn back to remote ages and seek to trace the connexion between art and the general progress of intelligence and action. The heroic age of Greece was short, but it was glorious. The period which is described roughly as the age of Pericles represents her greatest achievements in war, in literature, and in art. But we must begin somewhat earlier and go on to a later period than the actual epoch of Pericles.

And here, in the first place, it is interesting to note that the develop-

*Psychologists differ as to the order of the senses—some placing hearing, others sight in the highest place.

*The second part of the subject is not treated here.

ment of Grecian art took place in the manner and order which we should expect from a consideration of the nature and kinds of art. First comes architecture and first in this department the Doric the origin of which is assigned to the middle of the seventh century before Christ. More than a century later comes the Ionic, and after another century the Corinthian. The Parthenon was built in 438 before Christ, nine years before the death of Pericles. Let us remember the period in Grecian history to which these events refer. The battle of Marathon was fought in 490 and the battle of Salamis in 480 before Christ. The Peloponnesian war began about 431. Socrates died about thirty years later, and was succeeded by Plato and Aristotle, and the battles of Marathon and Salamis, bring back the great names of Miltiades and Themistocles. Such names and such events declare to us the glory of their age. To the same period belong the three mighty representatives of Greek tragedy—Æschylus, Sophocles, and Euripides; the first of whom died B.C. 456, and the other two fifty years later, Sophocles being 90 and Euripides 75 years of age. Anything might be expected of a people and an epoch that produced the Prometheus and the Oedipus. And accordingly we find that this was the age of Phidias, the greatest of the sculptors and statuaries, and, we might add, architects of Greece; for although he was not strictly speaking the architect of the Parthenon, yet he not only produced or superintended all the decorations of that magnificent fane, but he exercised a general control over its construction.

Every one has seen views, or models, or restorations of the glory of Athens, the temple raised to her virgin goddess—Parthenos Athene—from whom it derived its name, the Parthenon. It is to Pericles that we owe the appoint-

ment of the unequalled and inimitable artist who put forth all his artistic force in its production. Even the fragments of this glorious work are among the proudest artistic possessions of the British nation; and although some sentimentalists, Greek and Philhellenic, have denounced the removal of the Elgin marbles from Athens to London, as an act of Vandalism or Philistinism, it is probable that they have been thereby rescued from destruction. Better that they should look somewhat out of place on the walls and in the galleries of the British Museum than that they should have perished and passed away. There is no doubt that these sculptures were executed under the superintendence of Phidias; but the colossal image of the goddess, made of ivory and gold, which stood in the Eastern chamber of the temple, directly facing the entrance, was the work of the artist's own hand. The height of the statue was about 40 feet. It was considered, next to the great statue of Zeus, by the same artist, the glory of Greek art. Before the time of Phidias it had been customary to make statues either of bronze, or in part of marble, of which the face, hands, and feet were constructed, the rest being of wood concealed by real drapery. But in the statue of Athene (Minerva) Phidias substituted ivory for marble in those parts which were uncovered, and supplied the place of drapery with robes and other ornaments of solid gold. The eyes were of a kind of marble resembling ivory, and were perhaps painted to represent the iris and pupil. The statue represented the goddess standing, clothed with a tunic reaching to the ankles with her spear in her left hand and an image of Victory, four cubits in height, in her right. She was girded with the Ægis, and had a helmet on her head, and her shield rested on the ground by her side.

Still more celebrated than this statue of Athene was the colossal ivory and gold statue of Zeus (Jove), made for his temple at Olympia. This was regarded as the masterpiece not only of Phidias, but of the whole range of Greek art, and was exhibited only at the great festivals of the god, being at other times concealed by a splendid curtain. We must not here attempt a description of this great work except by mentioning the artist's own idea. When asked what model he had followed in producing the statue, he answered, that of Homer in the *Iliad* (i, 528): "Kronion spake, and nodded his dark brow, and the ambrosial locks waved from the King's immortal head; and he made great Olympus quake"—lines which are thought to be imitated by Milton (*Par. Lost*, iii, 135:

"Thus while God spake, ambrosial
fragrance filled
All heaven, and in the blessed spirits
elect
Sense of new joy ineffable diffused."

Phidias was rewarded by the democracy of Athens as it was their wont to reward their great men. The enemies of Pericles, having failed in the attacks they made on that great man, turned their enmity and wrath against his friends; and one of these was Phidias. Their charges were either false or frivolous; but they succeeded in having him cast into prison, where he died B.C. 432, six years after the building of the Parthenon, when he was about 58 years of age. Can we wonder that artists have often preferred the patronage and protection of the autocrat to the caprice and fickleness of the mob?

If, for a moment, we pass from Phidias to Praxiteles, we recognize the change which has been undergone alike by Athenian thought and Athenian art. Yet both are still great.

The age of Praxiteles was the age of Aristotle, the most learned and most universal of philosophers, of Demosthenes the greatest perhaps of all the orators of the world, and of Alexander, the mighty Conqueror. Praxiteles was both a statuary in bronze and a sculptor in marble. He stands at the head of the later Attic school, as distinguished from the earlier school of Phidias. "Without attempting those sublime impersonations of divine majesty, in which Phidias had been so imitatively successful, Praxiteles was unsurpassed in the exhibition of the softer beauties of the human form, especially in the female figure. The most celebrated work of Praxiteles was his marble statue of Aphrodite (Venus), which was distinguished from other statues of the goddess by the name of the Cnidians who purchased it. It was esteemed the most perfectly beautiful of the statues of the goddess. Many made the voyage to Cnidus expressly to behold it. So highly did the Cnidians themselves esteem their treasure, that, when King Nicomedes offered them, as the price of it, to pay off the whole of their heavy public debt, they preferred to endure any suffering rather than part with the work which gave their city its chief renown. It was afterwards carried to Constantinople, where it perished by fire in the reign of Justinian." The model for this great statue was a certain beautiful, but not altogether proper woman, named Phryne, of whom he made several statues. An amusing story is told of this lady, and of her device for obtaining one of his best statues. She had been promised any that she might choose; but the artist declined to tell her which he considered to be his best. The lady, determined to obtain assurance on the subject, caused a slave to inform Praxiteles that his works of art had been burnt. The

artist immediately exclaimed that all his labour was lost if the fire had touched his Satyr or his Eros. Phryne immediately confessed the trick she had played, and chose the Eros. This statue was removed to Rome, then sent back to Thespisæ, and finally brought to Rome again by Nero, where Pliny saw it in the schools of Octavia, and, finally, it perished in the burning of that building in the reign of Titus.

If you bethink yourself of any crime-unreconciled as yet to Heaven and grace, solicit for it straight.--*Othello*, v. 2.

He that hath a contented spirit hath great riches; and he that addeth field to field addeth trouble to trouble. For length of days is the increase of sorrow; and Wealth pouring in at the door driveth Happiness out by the window.—*Sophocles*.

EDUCATION IN FRANCE.

BY A. PURSLOW LL.D., LATE PRINCIPAL HIGH SCHOOL, PORT HOPE.

THE clever and versatile French journalist, Francisque Sarcey, now and then turns his attention to the Educational problem, which in France, as in Ontario, occupies no small share of public attention. He regularly writes "Notes of the Week" for *Les Annales*, an excellent Paris journal, and, in a late article, he published, with expressions of much satisfaction, a letter he had received from a young *demoiselle* of which the following is the substance:—

"When my father died, I was twelve years old, and my sister nine. The fall from affluence to comparative poverty that followed was sudden and complete. Everything had to be sold—horses, carriages, furniture, even our superbly dressed dolls. With some waifs saved from the wreck my mother took an apartment on a fourth flat, which seemed to us as narrow and gloomy as the tomb. But my father was a man of excellent common sense. He had made it a point to see that I should learn how to make my bed, to black my shoes, and do other trifling duties of every day life. The servants knew why we

did it, why my sister and I used to lay the cloth, wipe the plates and dishes, even on company days, and why we put everything in order.

"From the time I was able to do addition, he used to make me keep the kitchen accounts. It was I who cooked the egg he had for breakfast. He was fond of giving me instruction on all subjects, for this purpose often exciting my curiosity if needs be. When I used to go to the factory, he would teach me the nature of the business, and laughingly would say to me:—'You see, Lottie, if you have ever to buy a silk dress, I don't want you to be cheated.'

"I used to study in the afternoon, but in the morning my father would make us take long excursions; we would go to the fencing school, to the chase, into the country, and when he would take us for a trip in his yacht, it was indeed a red-letter day for us.

"Thanks to such an education as this, my sister and I were able to accommodate ourselves without much trouble to our altered circumstances. Nothing would have induced us to give Mamma the least trouble. In

place of expensive and faithless servants, she had two little slaves the most loving and devoted in the world. She sent us as day-pupils to the High School. Our school-hours were not long, and by helping one the other, we managed to learn our lessons, and do all the work of the house, and that, too, without spoiling our hands. I left the High School at twenty, and then went for two years to the Faculty of Letters. Now I am staying at home. I have learnt to make my own dresses and to trim my own hats. I did this at first because it was much cheaper, and afterwards because it was quite as satisfactory as the work of the dressmaker and the milliner.

"On the day I am married, I am to receive a legacy of thirty thousand francs; it is no great fortune, you will say: I look upon it as a good deal, considering that I hadn't to work for it. Many have done my poor dowry the honor of requesting it, but, up till now, I have refused all suitors. I am not romantic, but I want a husband that I can respect; and it is my great misfortune that I demand that the persons with whom I shake hands, and especially that the person to whom I give my hand, should be downright honest and virtuous. Besides, I am in no hurry at all to exchange my certain happiness and the warm and constant love of my dear Mamma for the uncertain chances of marriage.

"Faithful to the ideas of my father, my mother always allowed us to go out alone, and I would talk to any young man in whom she found nothing to find fault with. I am absolutely free to do as I like. No doubt, I shall be married some day, but I leave to God the care of sending me the man whom my heart shall love."

The same writer in another article upon the proper use of Encyclopædias, works of reference, etc., has the fol-

lowing pointed and sensible remarks on another phase of education,—remarks as applicable to Ontario as to France:—
 "The general run of men are scarcely able to know in detail, anything but that which belongs to their business, or to the daily occupation of their life. As to the other subjects, all a man can have is an openness of mind (based on a solid foundation of early education), which will enable him, readily and at once, to make himself acquainted with any subject he desires to learn about, either by reading or by conversation.

"For example: it is allowable to a man, who is not going to make physics his business, to be ignorant of the discoveries which savants are constantly making in them. It is allowable that he should have forgotten them, even if he once knew them. For him, the essential thing is to possess a certain number of general notions upon physics, which will enable him, if he consult a work of reference, or turn over the pages of a good work on the subject, to seize, comprehend, and assimilate the teaching which shall there he furnished him.

"So it is not the multiplicity of subjects he learns at school which will be useful to him in after-life, but rather the quality of mind, by the aid of which, he will be able, when he shall have need of it, to take possession of this knowledge and to make it his own."

Sarcey then goes on to express his great regret that education now-a-days aims especially at teaching young people a crowd of things, and forcing them to swallow, whether they will or no, a vast heap of indigestible information, and at making them when they leave school monstrous cyclopedias of all human knowledge. "Than this method," says he, "nothing is more false or more to be regretted. The sole business of education ought to be to form the judgment, and to give our youth a grasp of mind prompt and sure,

a discernment clear and delicate, in show, the qualities of mind which make men think rightly and reason justly. As for the facts, the minutiae, the dates with which we stuff our children's heads, now a days, alas, how quickly all these escape the memory. At the end of a few years nothing is left of them. That which remains, after these are gone, is the alert, healthy and absorbent mind."

Have the courage to be ignorant of a great number of things, in order that you may avoid the calamity of being ignorant of everything.—*Charles Dickens.*

The ideal life, the life of full completions, haunts us all. Nothing can really haunt us, except what we have the beginning of, the native capacity for, however hindered, in ourselves.—*Phillips Brooks.*

HOW SHALL THE CHILD STUDY.

REPORT to the superintendent of schools, Cincinnati, of a special committee appointed to consider this question. Mr. G. A. Carnahan, chairman.

To this question we may perhaps give a partial answer by saying that the child should study—

(1) With the proper aim and intelligence.

(2) Under proper direction and teaching.

(3) Under proper conditions.

In offering a word on each of these headings we may note briefly:

1. That the child is an organism developing from within outward, and the aim in its study and education is the evolution of all its faculties and capacities, and their discipline and training so as to bring out power and culture, and especially character building and virtue. The acquisition of knowledge merely, though important, should not be the main or sole object of education.

2. That the process of growth and development in its true form is slow and in many cases almost insensible in children, and cannot be measured by any positive standards; hence anxiety for definite and immediate results at stated times is apt to make

the character of study and teaching narrow and formalized. Education should be broad and directed to all the powers of the mind, and the constant use of the mere carrying memory in rote and routine work should be discouraged.

3. That the first point to be secured in study and education is *concentration* of mind. The subjects presented must, if possible, involve interest, curiosity, novelty, romance, or whatever will stir the nature of the child. The presentation should be graphic and pictorial. The method should always be to elicit and to insure self-help. The Socratic method of interrogation and suggestion should be used to set going, change the direction, limit, or make more distinct and critical the thought of the child as he evolves his own knowledge with just so much, or rather so little, aid as is absolutely necessary to keep up action. Skilful questioning marks an able teacher. The child must learn "the art of picking the thought out of its verbal husk."

4. The pouring in process, the dogmatic statement of facts given in formulated expressions, and then drilled in by groove and mechanic recitation is not education. Thorough

explanation, vivid description, pictorial representation, anecdote, story, and incident must make knowledge take root in the heart and imagination as well as the head. The simple memorizing of formulated truths is automatic or mechanical education, if it be education at all. It comes from the mistaken idea that *knowledge*, not *power*, is the end of education. This idea sets the Cook-Book above the Paradise Lost because it contains more facts and more practical ones than the divine poem.

5. Study and teaching must be scientific, not mechanical. Self-help by pupil must go hand in hand with inductive work by the teacher. Observation, comparison, judgment, the reasoning and generalizing powers of the mind must be brought into exercise rather than the verbal memory. The pupil, in many branches, like geography, may make his *own* facts; see the inter-dependence, connection, sequences, and relations of facts and so make his own *law*. Such teaching forms the quick, self-reliant, reasoning, scientific cast of mind which makes a nation of scholars like those of Germany. To inculcate proper habits of study, we must *superinduce thought*. We must have words explained and develop the power to master the printed page. We must stop the child who is beating his breast and conning unmeaning words, and by questioning must *force* him to think. We must ask in our lessons and tests, for the *substance* and the *thought*, not the exact language, and be content with feeble and inexperienced efforts at expression. By patience we can teach a thoughtful way of study and a habit of self-help. Especially is this so in higher grades, where children should be taught to seek out, and learn to use the *tools* of knowledge, books, encyclopædias, dictionaries, etc., and to bring to the class-room

new matter of their own collecting. We should not greatly regard the amount achieved but should consider that the *habit* is invaluable, and a necessary element of good work. Help to study and think intelligently is the most important aid we can give to children, and a better one than cramming them with undigested facts, and making lumber garrets of the mind to stow away useless details.

6. Study the objective and concrete not abstract and analytical. Objective teaching in number is admitted everywhere. Objective teaching in geography should have more raised form and surface maps for outline and elevation; more globes, pictures, stencil representations, and other appliances for teaching the springs of interest and imagination. Every school should have a set of Guyot's surface maps, and use them too. The much neglected object lesson craze has fallen into far more disrepute than it merits, and the revival and constant use of observation lessons on things is desirable, not only for their use in training, but as a basis for language and composition lessons. The substitution of reading and picture lessons in composition work for those of observation, is taking these excellent aids to development out of vogue. The use of a concrete or synthetical method of teaching language by means of composition rather than technical grammar so often affirmed by our principals is indicated by a correct theory of education. Spelling should never be taught out of its connection with reading.

7. The impulse to study should be a *love of knowledge*, and not the desire for *competition, results, or rewards*. Medals, prizes, and strong incentives destroy the dignity of scholarship, and opening the springs of envy, jealousy, and selfishness, retard character build-

ing in both pupil and teacher. They awaken propensities at war with the peace and harmony of the higher life. They introduce children too early to the strife which disregards kindness and justice.

8. Teaching and study should be with as little goading, stimulation, and over pressure as possible, consistent with a normal development of faculties. Every object or motive which spurs a teacher or pupil to undue anxiety or superficial work, or which tends to affect temper, integrity, or kindness to children, should be removed. All possible causes of nervous depression or physical debility should be taken out of a correct system of education.

9. Study must be under healthy physical and moral influences. Education must not be so much a matter of mental training, so much a matter of time tables, programmes or schedules of work that there are no opportunities for sympathy and affection between teacher and pupils. This humanity is an indispensable condition of any good work. No teacher can account her duty fulfilled who does not put herself in a feeling nearness to the health, home life, hopes, wants and woes of the benighted ones often entrusted to her care.

10. Study must take in the forms of moral development and character building. Port-holes must be made in the course of study for the tender, the beautiful, the true, the good, wherever and whenever they can be brought in. Drill and work must stand aside for them. Discipline, too, is a part of this moral work, and in the hurry of over work may be made to educate into the hardness of criminals those who, if the reason and the heart had been touched and convinced, might have been made good and worthy men. Passion, stimulating resentment and stubbornness, dogmatic injunctions, awakening no reflection or acquiescence of con-

science, reproof and punishment without kindness or sympathy, are every day making bad men out of our children. A heavy responsibility is on the teacher who from indifference, hurry or want of self-control thus adds to the criminal classes of society, and a heavier one on any system which drives and goads its teachers, by over work, over anxiety, or nervous dread, to forget professional integrity.

11. While study and teaching in public schools must be methodical and uniform, yet we believe the tendency in our large cities is toward an over-organizing, and over systematizing that gives too much rigidity and treadmill character to education. The "system" places too much stress and reliance on palpable and showy individualism.—*The School Journal*, (N. Y).

Be checked for silence, but never tax'd for speech.—*Alls well that ends well*, i. 1.

THE BIBLE.—The Bible has hitherto been banished from Australasian schools, but it looks (says the *Westminster Gazette*) as if a reaction were setting in. The South Australian Upper House has carried a resolution in favour of the proposal to take a vote of the electors on Bible or no Bible. In Victoria seventy members of the present assembly, including the Premier, are also, it is said, in favor of a Plebiscite, and on this point the *Australian Review of Reviews* says: "If the matter is to turn on a popular vote there is no room to doubt what the result will be. The National Scripture Instruction League has already taken a Plebiscite in nineteen districts, and 46,000 votes were cast in favour of the Bible in the schools, and 4,000 against it." Future developments of the question will be watched on this side with the greatest interest.—*The School Guardian*.

HABITUAL OFFENDERS.

HITHERTO Government inquiries and Social Science discussions have been conducted as if the principal point to be ascertained was, how the existing habitual offenders could be improved. The greater part of the labours of the Departmental Committee now sitting seems so far to have been expended in this direction.

We venture to submit that these labours would be much more profitably bestowed if they were devoted to the purpose of stopping the source of supply rather than of dealing with the ready-made offender.

Experience has taught us that when the habitual offender has reached a certain stage his reformation is next to an impossibility. Improvement to a certain extent may no doubt be effected by much care and improved systems of treatment ; but a complete cure is more than can be reasonably expected. By all means get every improvement effected that is attainable within reasonable limits ; but do not let the question of how to do this so overshadow the main question as to put it out almost of sight.

It is not suggested that the members of the Government Departmental Committee now at work are entirely ignoring the question as to how the ranks of the habitual offenders are recruited ; but all that has transpired concerning their proceedings goes to show that their energies have been exerted much more in the direction of how to deal with the existing offender than how to prevent his creation. When suggestions were made as to important changes in the mode of education of the young, and when it was attempted to be pointed out that the root of the evil was more likely to be struck at by this means than by any other, these suggestions were, it is said, rejected as being beyond the scope of the Committee.

This is to be regretted, because while it is most desirable that the committee should carefully avoid being drawn into any phase of the question beyond what is of real practical utility, it will be a matter of much more serious regret if, through any mistaken ideas as to the limits of their inquiry, they decline to consider thoughtful schemes, capable of almost immediate application, and which would give a reasonable prospect of stopping, or at all events of lessening considerably at the fountain-head, the supply of those likely to become habitual offenders.

The School Board has now existed for twenty-three years. Has the system of education which it introduced assisted to lessen juvenile delinquency ? Has any perceptible improvement taken place in the conduct and character of the rising generation ? Has it laid a foundation for the hope that it will have any marked effect in reducing the number of habitual offenders in the future ?

There is, alas ! too much reason to fear that only negative answers can be given to these queries.

Juvenile delinquency has increased at a rate almost alarming.

The children of the poor of to-day have less regard for law or authority.

They are more prone to acts of wanton mischief.

Rudeness, incivility, indecency, and profanity are more than ever features in their speech and behaviour.

Veneration or respect for age and experience is a diminishing quality.

Drinking and smoking have become habits at a much earlier age.

The whole tone of the conduct of the children of the poor is disappointing and regrettable.

Many may say that these allegations are over-stated, and that much of what is complained of is only

the result of the "faster" rate of living of recent times,—that the objectionable characteristics which obtrude themselves so frequently are only surface blemishes which will disappear as the years of discretion are reached, and that in course of time the benefits contemplated by the Legislature as the results of the Education Acts will be attained.

It may be answered that the allegations are founded upon a very intimate and practical acquaintance with the subject. Whatever the ultimate effects of the Education Acts may be, there is unfortunately too much reason in the present day to fear that the "surface blemishes" will develop into qualities that are more likely to increase than to lessen the number of habitual offenders. They certainly point very strongly to serious defects in the present mode of teaching the young. Can this mode of teaching and the subjects taught be so arranged as to bring about a material improvement in the conduct of the rising generation? Can such improvement be so developed as to produce a lasting effect on character and conduct, and therefore to be reckoned on as an important factor in reducing the number of habitual offenders?

It has long been known that many of the best teachers in the employment of the School Board have formed very decided opinions as to the non-moral effect of the present system of teaching. Of course they do not suggest for a moment that there is the slightest immorality in it; but they are very pronounced as to its non-moral tendency. They complain that their time is so much taken up with "cramming" in order that the Government grants may be secured, that it is impossible for them to devote themselves adequately to such moral training of the children as should form one of the chief essentials of their lives.

If, instead of the "cramming" that has been going on for the last three-and-twenty years, there had been a healthy "standard" of conduct steadily taught to the children, the results would have been very different, and we would not be deploring the increase of juvenile delinquency and the other unsatisfactory characteristics of the children of to-day. If half as much attention had been given towards teaching the young to be truthful, thoughtful and useful, kind and civil, courteous and polite, cleanly and orderly, as there has been given to "cramming," we venture to think that the outlook as regards our habitual offenders would not be so dismal as that which unfortunately prevails. If every child on beginning its school career was properly grounded in rules of good conduct, not only while attending school but when at home or on the street, a foundation would soon be laid on which would rise the improved behavior of our young men and women. If such a curriculum had been established when the School Boards were originally formed, and had been persistently and intelligently taught, we would at the present day have been having such restraining home influences as would have ten times more effect on the growth of the habitual offender than all the improvements that can ever be introduced in their police court or prison treatment, or in the amendment of the liquor laws.

It may be said that the duty of teaching children good conduct is one which more properly belongs to the parents than to the teachers, but until the parents themselves know something more about good conduct and behaviour, and how to live properly, it is idle to expect them to teach their children. Under the present "cramming" system neither the children nor the parents of successive generations can be much improved, and we will

simply go on year by year turning out so many thousands of crammed children, who, in so far as their Board-school teaching is concerned, have learned practically nothing which leaves any permanent effect upon their moral conduct in after-life. The old parochial system, if it did nothing else, left something on which we could reflect all our lives. The present system leaves nothing.

The "musical drills" and other similar exercises which have been introduced in the Board-school teaching are in the right direction; but these should be followed up by a properly devised course of instruction in conduct and behaviour. One of the chief causes of the prevalence of drunkenness in Scotland is that our poorest class is so deplorably deficient in the knowledge of "how to live." In England, while there is much room for improvement in this respect among the very poor, there is a distinct advance upon the Scotch, and the results are shown in the relative proportions of habitual offenders in the two countries. A very great improvement could easily be effected by a little practical common sense teaching of the young in "how to live." Perhaps in no country in the world is less real economy in household life practised than among the poor in Scotland. Real, sensible thrift in domestic life is unknown; and if account is taken of expenditure on drink, it may be safely asserted that the class in Scotland which is poorest, is at the same time least economical. There is no reason why the causes of this state of matters should not be carefully taught the young. The greatest object of all the teaching should be to make them ultimately better men and women.

Why cannot the children in school be taught some of the frugal and thrifty habits of the poor in France or Germany, where trifles unconsidered in this country are utilized in such

a way as to make the most material difference in the cost of living? Why cannot the rudiments of thrift and order, of thorough cleanliness and regularity in daily life, of gentleness, and politeness, of kindness and consideration towards one another, be instilled into them as the very essence of their existence? A different tone and colour would thus be given to their "education," so that when the period arrived for their leaving school, they would go out to the world with an altogether different idea of the duties and responsibilities of life. Under the present system they leave school with only a dazed, hazy notion about half the subjects in which they have been crammed, and even without having been taught *how to think*. The result is not to be wondered at. The child is purposeless, unmethodical, thoughtless, careless, and altogether unfitted for the battle of life. Instead of having been transferred into a practical, useful help to his or her poor parents, it has simply become a receptacle for a mass of superficial "education," one half at least of which will be found utterly useless in after-life. The child has certainly learned to read and write in a fashion, but beyond this its school training has been practically useless.

This is not the fault of the teaching staff, but of the system which, according to the School-Board regulations, they are bound to follow. What is wanted is a radical change in this system. The public has already the staff at its command, thoroughly competent to teach all that is suggested. Let a curriculum of conduct and behaviour be the beginning, and let it continue to form one of the chief essentials, of the school training. Instead of "cramming," let this be followed up by careful instruction in reading, writing, and arithmetic, and in the outlines only of such simple subjects as are likely to prove of service in ordinary

everyday life. Let the boys be shown how they can best become useful citizens, and the girls thrifty and competent helpmates.

It is not the purpose of this paper to do more than to indicate what the change in the system of education should be. The details may be left to the direction of those best able to arrange them, the objects aimed at

being kept constantly in view. If the curriculum suggested is made one of the principal features in the future training of the young, there is good reason for hoping that a new era may be established which will do much to sap the growth of habitual offenders, and materially reduce the crime and disorder so common among the very poor.—*Blackwood.*

NATURE STUDIES.

REV. WM. M. THAYER, FRANKLIN, MASS.

WHAT educators call "nature studies" receive more than their just share of attention. We do not believe that they are entitled to so much time and study as are accorded to them now in the curriculum of our public schools. They seem to have been taken up, in the first place, because certain great men and women—poets, authors and scholars—caught the inspiration for their life-work from their environment. They were born and reared where grand scenery awakened admiration and wonder, enthusing them with higher and nobler thoughts and aspirations than otherwise would have been possible. Because this was true of a few geniuses, it is, unfortunately, concluded that all young people may become similarly inspired by the study of Nature. In consequence, time that is indispensable for the fundamental branches, without which neither boy nor girl can be fitted for the practical duties of life, is devoted to "nature studies."

When Chief Justice Marshall was a young man, he made a journey through that part of Virginia in which Patrick Henry was born. Deeply impressed by the mountain scenery, he exclaimed, "What a grand sight! How soul-

inspiring and thought-producing! No wonder Patrick Henry was an orator; no wonder he was eloquent; how could he have been otherwise, reared amidst such sublime scenes as these!" An old farmer, standing by, said, "Young man, those mountains have been there ever since Patrick Henry was born, and there has been no orator like him since."

The farmer was a philosopher. He saw that the whole population of that region, for several generations, had been "reared amidst such sublime scenes" without waxing eloquent at all, and, therefore, young Marshall's remark was pointless to him. If that wonderful scenery could grow oratorst a crop of only one needed explanation. He believed that Henry was a *born* orator, and his environment might have helped to develop his gift; and that the reason no more orators appeared on the scene was because they were not born.

This is a very instructive fact. Those "sublime scenes" might have inspired Henry to nobler deeds, and they might not. It is quite certain that the exciting and stormy events of his youth, culminating in the struggle for American independence, brought

him to the front as a patriot, statesman and orator, as the late civil war made General Grant out of the unknown leather-merchant of Galena. The call "to arms" aroused the genius that was in Grant. The "battle-cry of freedom" fired the soul of Henry, and his eloquence gushed out.

Evidently Patrick Henry did not take much stock in the idea that "sublime scenes" made him what he was. For, he said to a young man, seeking his advice about the study of law, "*Study men, not books.*" He was himself a student of human nature, and not of Dame Nature. Herein lay his power as pleader and public speaker. He did not mean to say that books are of no account. His pleas and speeches are positive proof that he was a careful reader of history, biography, science and literature. At least, he never dreamed that mountain scenery inspired his eloquence. He must have known more about it than anyone else.

There is more theory than fact in the present view of the value of "nature studies." Here and there a poetic and aspiring soul is lifted into a grander career by the beautiful and sublime in Nature, while the great majority of dwellers amidst the same environment plod on, living in the common-place way! Genius is easily inspired to noble action; but the vast multitude of men do not possess genius. Great souls may receive a mighty impulse from a *hint* of Nature; but the rank and file of human souls are not great, and it is well they are not. The falling apple was both a revelation and inspiration to the genius of Sir Isaac Newton, but it meant nothing to the thousands who beheld its fall. He discovered the law of gravitation in it; all other people discovered nothing. Tempests had burst upon the world with lurid lightnings from the days of Adam down to Franklin, who, of all the population, in all the

generations, saw that lightning and the electric fluid were identical. The eye of Franklin's genius was sharp and piercing, while the mass of people had no genius to be sharp.

"Woodman, Spare That Tree," is a fine poem; Morris never wrote a better one. He told the history of it as follows:

"Riding out of town a few days ago, in company with a friend, an old gentleman, he invited me to turn down a little romantic woodland pass not far from Bloomingdale. 'Your object?' I inquired. 'Merely to look once more at an old tree planted by my grandfather, long before I was born, under which I used to play when a boy, and where my sisters played with me. There I often listened to the good advice of my parents. Father, mother, sisters, all are gone; nothing but the old tree remains. And a paleness overspread his fine countenance, while tears came to his eyes. After a moment's pause he added, 'Don't think me foolish. I don't know how it is; I never ride out but I turn down this lane to look at that old tree. I have a thousand recollections about it, and I always greet it as a familiar and well-remembered friend.' These words were scarcely uttered when the old gentleman cried out, 'There it is!' Near the tree stood a man with his coat off, sharpening an axe. 'You are not going to cut that tree down, surely?' 'Yes, but I am, though,' said the woodman. 'What for?' inquired the old gentleman, with choking emotion. 'What for?' I like that. Well, I will tell you; I want that tree for firewood?' 'What is the tree worth to you for firewood?' 'Why, when down, about ten dollars.' 'Suppose I should give you that sum,' said the old gentleman, 'would you let it stand?' 'Yes.' 'You are sure of that?' 'Positive.' 'Then give me a bond to that effect.' We went into

the little cottage in which my companion was born, but which is now occupied by the woodman. I drew up the bond. It was signed and the money paid over. As we left, the young girl, daughter of the woodman, assured us that while she lived the tree should not be cut down. These circumstances made a strong impression upon my mind, and furnished me with the materials for the song I send you."

That old gentleman was one of a thousand—a sort of domestic genius among men. While many men are drawn to the old homestead by precious memories, he is the only one among them, of whom I ever heard or read, paying ten dollars for the life of a tree. And only a genius, like Morris, could ever have been inspired by the scene to do something immortal.

It is not wise to formulate a system of culture for the many that is based on a class of facts pertaining only to the few. The "old education" that drilled pupils in the three R's, referring those who sought a higher culture to private institutions, was far more reasonable than that of the "new education," which requires the boy and girl who must quit school with the high grammar grade, to pursue the same course of study as those who are going to college. Far, far better to furnish their minds thoroughly with that common-place knowledge for which they will find daily use on the farm, in the shop, and in every other pursuit for a livelihood. It is a bread-and-butter question with the masses; and this compels limited schooling and a busy life. Equip them well with that knowledge and discipline that will fit them to earn an honest living, intelligently and cheerfully, rather than give them a smattering of this, that and the other, that will be of no practical use at all to them.

It is not denied that there is a de-

gree of good in "nature studies" for the class named; but it is so small in comparison with the equipment of thorough drill in the fundamental branches, that it is not entitled to consideration, especially when we regard the fact that their very limited school-days are scarcely sufficient for the mastery of the common branches. Professor Felix Adler said before the School of Applied Ethics at Plymouth last summer, "Concentration is salvation. Dissipation is destruction." Exactly. Concentrate the young mind upon the fundamental branches and thoroughly ground it therein; and then, if the pupil advances to the academy and college, he is altogether better qualified to do good work, and if he quits study at the high grammar grade, he goes out into the world better fitted for his life-work. Do not confuse him and distract his mind with a half-score of studies, when he may concentrate his attention upon the essential few to greater advantage.
—*Education.*

JOHN A.—Under the head of personal reminiscences, "S. S." contributes a delightful anecdote of the late Premier of Canada. It seems that Lord Dufferin once addressed the University of Toronto in Greek. Next day the papers announced that his Greek was idiomatic and perfectly grammatical. Whereon the following dialogue ensued:—

"How did those idiots of reporters know that?" said Sir Hector Langevin to Sir John A. Macdonald.

"Because I told them," replied John A.

"But who told you? You don't know Greek," Sir Hector persisted.

"I don't know Greek," John A. answered with his usual gravity, "but I know politics."—*The School Journal.*

THE DIRECTION OF EDUCATION.

THE most important, if not the most obvious, gains in the modern economic arts are in the ways of saving labor. The century of invention which is nearing its close will remain forever memorable, for the reason that it has vastly increased the resources of civilized people. It is indeed likely that a close analysis of the conditions would show that, in mechanical employments, the productive power of men has increased not less than fivefold over what it was in the later years of the eighteenth century; the last hundred years having been greater in results than all the previous ages during which our kind had been learning the lessons of employment. The ancients conceived the world as relatively simple. We recognize it as infinitely complex. To them the earth appeared to be a limited realm, whose stores could be readily inventoried. We see it as a universe holding an inexhaustible store of things unknown, all of which may be made useful to man.

By the diversity of employments which have necessarily arisen in our modern life, we perceive, or at least are beginning to discern, that in our fellow men there is another universe as rich in resources as the physical world. So long as occupations were limited in their variety, as they were until this developed age, it was a relatively simple classification which had to be provided to include the several kinds of talent that could be of service to society. Above the plane of the common herd, whose peculiar capacities were no more considered than are those of the sheep in the flock, there were but a dozen or so fields of endeavor in which talent was of value. The activities of the statesman, the soldier, the priest, the jurist, the physician, the architect, with some

few minor occupations, represented the walks of life upon which a man of capacity could well enter. When placed by birth or the chance of life in any vocation, little account was taken of the special qualities that he might possess. Differences in power were of course well recognized, but diversities of talent, those peculiarities of nature which, developed by education, might fit the person for particular accomplishments; were, until our own time commonly disregarded.

Even in our day, the diversity of men, that peculiar accommodation of the mental parts which fits each individual for specific duty, and makes every fairly educated person especially suited to some of the manifold tasks of society, has not been formally recognized. We can only note a rough appreciation of the facts in the endless shifting of our population to and fro among the vocations, as each man looks for the exact kind of labor which he is fitted to do. Laborers and employers are ever seeking to avail themselves of this diversity of talents; in fact, a large part of the gain in the economic efficiency of the labor of our time has doubtless come from this very modern system whereby the man may make a trial of his talents by essaying various forms of work, until he finds the task which is his birth-right. Human intercourse is in its nature so limited that it ordinarily reveals only a very small part of the latencies of the individual. Immemorial custom has habituated us to accept the little of our neighbor which is disclosed to us in his aspect or his speech as a satisfactory indication of the man. For the simpler purposes of life these signs of quality are sufficient, but in this new day, when we have to fit men to do deeds of exceeding variety and delicacy; when, in a

word, we have to adjust the man to his duty in a way that was not necessary in the ruder and more primitive conditions of civilization, these rude tests will not suffice. In their place must come a system wherein each person shall be explored for capacity, and the task of nurturing the talent shall receive the attention which we already devote to our mechanical contrivances, or to our domesticated animals and plants.

There are those who hold that all capacity is a common or united quality; that if a man have mental power it may be turned in any direction, so that from the same strong mind we may, according to the nurture, make the poet, the statesman, the soldier, or the discoverer of natural order. I doubt if any experienced teacher, who has been willing to be taught by his experience, will affirm this opinion. The evidence which comes to him is to the effect that capacities are special; that though mental strength must be the foundation of all ability of a profitable sort, the direction or set of the individual capacity is, in substantially all cases, determined by the conditions of inheritance; that it is implanted in the individual by events which were shaped before he came upon the earth. It may be somewhat qualified by the powers of education, but the essential form remains to guide the stream of life. As at present contrived, our educational systems proceed on the assumption that persons of the same sex and age are substantially alike; and, further, that the aim of training is to bring the young to certain standard modes of thought and action which experience shows to be best for people according to their social or intellectual casts; in a word, to bring them into an accepted, a necessary state of uniformity, in order that they may fill their appointed stations. It seems perfectly clear

that the full value of man cannot be extracted by routine methods. The tendencies to depart from the normal are ordinarily weak; so that it requires peculiarly favorable conditions to permit them to attain their possibilities. The easiest way in the world to crush out a peculiar manifestation of talent is to subject the youth to a training which will develop the commonplace qualities of the mind in which it seeks to spring.

There seem to be but two ways in which we may hope to mend the breach in our educational system which comes from the lack of information concerning youths when they most need the advantages that such information might afford. One of these ways would be to have the connection between the fitting-schools and the universities so intimate that the teachers of the two grades would constitute one body, having a common knowledge of the pupils. The other way is so to unite the secondary schools and the universities that the teachers of the schools may feel that they do not part from their pupils in the last stage of their education. As a first step in this direction, it might be suggested that each student, at his matriculation, should have, as a part of his introduction to the university, not only the formal and generally useless certificate of good moral character and of fitness to pursue a course of study within its halls, but also a statement as to what is known of his mental peculiarities, his aptitudes and inaptitudes; these are ascertained in the class-room of a good fitting-school more clearly than they can be by any system of entrance examinations.

Society, owing to its nature, is ever demanding peculiar talents. In this age of mechanical industries, the necessity for a varied educational product is increasing at a very rapid rate. To meet this need, it is essential for

educators to seek out those—in my opinion, by far the greater part of the youth—who have a special fitness for certain kinds of duty. The various abnormal powers of young people which we term talent are in most cases exhibited about the age of puberty, or about the time when they are in the secondary schools. Unless these tender shoots of exceptional ability are noted and cared for they are likely to perish. Therefore it is of the utmost importance that those who instruct the young in this period of their lives should watch for those buddings of development which are of good promise, as they have to do

for those other aberrations which are in their nature degrading. Where the capacity is discovered, it needs to be nurtured, and the knowledge of it should be sent to the teachers who are next to take charge of the youth's education. This transmission can be most effectively accomplished where the men in the two schools know each other; where, in a word, the institutions are united by means of a full understanding as to the joint work which they have in hand. But in whatever measure and manner it can be done, it will be profitable to undertake it.—*Prof. N. S. Shaler, in the Atlantic Monthly, Boston, March.*

FUNDAMENTALS IN TEACHING.

BY E. E. WHITE, LL.D., COLUMBUS.

THE art of teaching involves a knowledge of its fundamental principles; and, since teaching is a science as well as an art, these fundamental principles are few in number. There is a great advantage in this fact, since few teachers are capable of applying many principles in their art. There are, indeed, very few teachers who can intelligently apply in actual teaching a half score of principles. The great educational reformers discovered and applied each but one or two.

What seems to be specially needed at the present time to secure higher efficiency and surer progress in school education is a clearer grasp by teachers of what is fundamental in the teaching art. There ought to be not only clearer knowledge of what is fundamental, but a more intelligent and conscientious application of such knowledge in school work. Real power and skill in teaching are not born of uncer-

tainty and indefiniteness. School work needs to be *grounded*—to rest on a sure basis, even if this be narrow. A narrow basis is better than none; and, besides, a narrow basis, it true, can be broadened by wider knowledge and experience.

School experience shows that while many teachers can apply a few essential principles of which they have a clear grasp, there are very few who can practically apply a philosophic and complex theory of education—not to say philosophic system; and all teachers are misled and confused by the acceptance of the mere phases and conditions of the teaching art as essential principles. What a divorcement of philosophy and practice in the school work of many of our would-be educational philosophers!

For several years past I have been studying with some care the more promising phases of pedagogical inquiry and experiment, in the light of

what is believed to be fundamental and guiding principles in teaching. I have tried to subject every well-defined theory of education urged upon teachers to the decisive test of these principles. As a result, I am painfully impressed with the belief that much of the so-called *philosophy* of education now clamouring for the attention of American teachers will never prove a helpful guide in school work; and this is specially true of what may be called the philosophy of psychology. What elementary teachers most need is a clear knowledge of *psychical facts*—the philosophy of these facts being beyond the grasp of mere tyros. The work of many earnest teachers is badly muddled by attempts to apply in their teaching ill-digested theories and speculations, and especially philosophic systems based on some "new psychology."

"Psychology," says Professor M^unst^enberg, of Harvard University, "has to pick out some of its best fruits for the work of education; but this cannot be done, by the way, by teachers who are dilettantes in psychology. The one part of teachers—the superficial ones—will deceive themselves by empty phrases, or will torture the poor children by useless experiments. The larger part—the earnest and sincere teachers—will feel soon that all those laws of apperception and all those woodcuts of pyramidal ganglion cells do not help them a bit. They will not become better teachers by such knowledge, just as they would not become better pianists by knowing how many vibrations a tone has. They will become disappointed in their psychological studies."

I would not be understood as wishing to discourage pedagogical inquiry or the study of the philosophy of education, or even speculative philosophy. All earnest study is helpful to a teach-

er, even when the knowledge gained cannot be directly used in school work. It results in growth in mental power, and keeps the mind inquisitive, alert, fresh, stimulating. The caution is against attempts to apply imperfectly understood theories in school work, and especially in the subjecting of children to unskilful experiments. It is feared that some of the experimenting upon children in our schools is well-nigh criminal.

It has long been held and often asserted that the only true test of a method or device in teaching is its actual use in the schoolroom. No test has been more misleading. The sorriest stupidities in teaching have been supported by what has seemed a complete success. It is marvelous what little children can be led to do by an enthusiastic and skilful teacher. Who has not witnessed the highest interest, and even enthusiasm, awakened by devices that violate every true principle of child training? Nearly every bad method of teaching that has had its day in American schools has been commended on the ground that "it works well." While many of the old routines thus commended were stupid, not a few of the new devices are positively silly.

It is conceded that every true principle or method of teaching will work well in practice *under right conditions*; but the radical test lies back of practice and should interpret practice. The supreme question in education is not what children *can* do, but *what they ought to do*. One of the important functions of the science of pedagogy is to protect children from the experimenter and device-maker.

The fact is that both psychology and physiology have already picked out not a little of their best fruits as a guide in education. Subjective psychology, the psychology of consciousness, has furnished the basis for a true method of teaching—a basis

that may be modified, but is not likely to be supplanted; and physiology has thrown a clear light upon its physical conditions—including such facts as the physical conditions and limits of attention, semi-perception, and memory, the effects of school-life on the growth, health, and vigor of the body, etc.

What teachers imperatively need is a clear knowledge of the immediate ends and principles of teaching. They make sorry work in the application of ultimate or philosophic ends of education. What is needed for their

practical guidance is *the science of the teaching art*—not the philosophy of education. Philosophy seeks, but does not always find, ultimate ends and principles, and these are too far removed and too general to serve as a practical guide to the average teacher. What, for example, could such a teacher do with the ultimate principle (if it be one), “The end of moral training is to put men in right relations to the universe”? The elementary teacher needs to keep his feet on the bed-rock of simple fundamental principles.—*Journal of Education.*

AS REGARDS ACCURACY.

BY PHILEMON SMITH.

IN my first years of teaching, I heard this criticism on a colleague: “He is not accurate and you can not trust his statements.” This led me to a self-examination, and ever since I have attempted to be accurate in crucial matters, especially in teaching facts.

Not, however, that I do not indulge in round numbers, and care little whether I have the exact value of π , or know the exact rapidity of the velocity of light, or of the distance of the sun; and, when I unbend myself in the social atmosphere, relish and retail Munchausens as a compensation and a relaxation. In my business, which is teaching, I take every pains possible to be accurate. I try to impress the necessity of accuracy upon my pupils, because it is of infinite importance to them to distinguish between a fact and a probability, between a law and an hypothesis, between a matter of knowledge and a matter of guess, between a clear demonstration of a problem and a hap-hazard attempt at and a half real conception of the

truth to be stated. In major questions, we know or we do not know, and it is well to acknowledge that it is so. In minor questions there are so many disreputable and insignificant considerations involved that we hope to escape responsibility for them. But if we try so to do, be sure our sin will find us out.

A teacher in my old home district, who assumed to teach “algebra and sich,” lost all standing among her pupils because she spelled colonel, kernel, on the blackboard; and I know of a college professor who became the butt of his pupils because he misspelled *oar* for *ore*. The latter mischance was a beginning for an enormous list of tests for his accuracy. The boys came to question, at first mischievously, and afterwards withset purpose, almost every statement that he made, and fairly worried the poor man almost out of any definite conception of what he knew and what he did not know.

These are trivial matters, but they led to disaster. Now, I am prompted

to make these remarks because my daughter, Clemence, is learning a poem to recite. In it occurs the line,

"Neither shall fruit be in the vines."

Her tendency is to substitute *on* for *in*. The substitution is the ordinary form; but it is not so in the poem, and I insist she has no right to make the change. This, also, is trivial and of the trivialist. It is not nearly of so much importance as whether Mary succeeded Elizabeth, or Elizabeth, Mary, although both were kin, as "on" and "in." We are getting along, in a sort of a way, after both Mary and Elizabeth have been gathered to their fathers; and, really, they do not matter, at this present, much more to us than Clemence's problem of the "on" and "in." Both are important as regards the question of accuracy, and, as far as the habit is concerned, of equal importance.

A quotation is not *the* quotation unless it is expressed in the exact words of the author; a supposed fact is not a fact unless it expresses the *truth*, at least so far as it goes.

When Milton wrote—

"While the Creator great
His constellations set
And the well-balanced world on hinges
hung,"

He expressed the truth, in poetical language, as far as he understood it, but the whole truth of the hinges was unknown at his time, and I do not censure him for the following line:—

"Ring out, ye crystal spheres!"

Although I doubt if the greater part of his modern readers understand what he meant.

What I intend by this digression is to say, that, although in stating a fact we are bound to state the truth, we are not compelled, under oath, to state the "whole truth and nothing but the truth." The last, certainly, if we can, but the whole truth means too much. The earth revolves on its

axis, and also around the sun, and how many other revolutions it has God only knows. Astronomers know some others, but it is of no use to bother a child with them.

So, also, I do not think it necessary that my Clemence, who is now a tyro in United States history, should learn all about the family matters of the many heroes who discovered and explored North America. Of course I recognize that the page of history may be illuminated and made more interesting by the little touches of nature "which make the whole world kin," but too many of them have all the effect of a heavy hand, and so overload the topic that its main point is lost.

That is, accuracy requires that that portion of truth should be stated which is requisite for the purpose in hand. It should be truth, so far as it goes; so that, in the hereafter, nothing should have to be recanted and a new statement substituted, or that nothing may have to be relearned under a new and better form. If Clemence asks me a question, the answer to which I know she cannot understand, I tell her so and bid her wait till she is older and can comprehend the facts in the case.

If she asks a question beyond my powers of answering, I plead my ignorance rather than offer a guess which, in time, she may find out to be a wrong one.

I could go on, but I have written enough; and, if ever the Pope chooses to canonize me it will be because I have striven, am striving, and shall strive to be accurate even in small things.—*Ohio Educational Monthly.*

— — — — —
A generous nature is not prone to strong aversions, and is slow to admit them even dispassionately.—*Charles Dickens.*

THE CAUSES OF IGNORANCE OF THE SCRIPTURES.

IN a recent article we pointed to significant indications of the sad ignorance the Scriptures which existed even among the youth of Protestant families. We do not think that the prevalence of this ignorance has been exaggerated; nor can we claim any favored exemption for Canadians. It is alarming to find this knowledge so meagre where it ought to be most ample. It ought to be matter for earnest searchings of heart to ascertain why this is so in a Protestant country where the Bible is the corner stone of our religion and of our liberties.

Some of these causes have been suggested by the writer in the *New York Independent* to whom we have already referred and by others. Other causes may present themselves to our readers.

All these causes can, we think, be classified under two heads. They lie partly in the changed conditions of life, and partly in the changed relations of the Bible itself to our literature and much of our religious thought.

The latter are, perhaps, the most indicative of danger. Let us look at them first. Viewing the Bible as a portion of literature, and especially of religious literature, it does not hold the unique place it held fifty years ago. Books then were comparatively costly, and proportionately scarce in the majority of homes. The library consisted, perhaps of a score or two of volumes; a few old histories, a few volumes of poetry and travels, some volumes of sermons and religious literature, and the Bible. Since then the literary activity has been enormous. The cheap multiplication of books and the institution of libraries bring a vast variety of reading within reach of the poorest. The Bible is no longer the one book as it used to

be in myriads of families. It has been buried under an avalanche of heterogeneous literature.

Now, if all this literature were religious in its spirit, and, at least, favourable to the claims of the Scriptures, the danger, though real, would not be so great. It would be simply the danger of neglect. But it is not the mere risk of being overlooked which threatens the divine Word. There is an atmosphere of unbelief which threatens to extinguish genuine reverence of the Scriptures. The novel, the review article, the light essay, and the newspaper, furnish largely the mental pabulum of thousands. Many books which profess to popularize science are animated by a spirit hostile to revelation. Where overt enmity is not displayed, there is often the sneer, the innuendo, the half-expressed doubt, which chills and kills interest in the Scriptures, and they lose their hold upon the life and opinions of the young.

The second source of the evil we deplore lies in the family itself. There is a decline in family life. The interests external to the home have broken up the old-fashioned, simple family life. Parents are not so much with their children, and when with them are full of other interests. Children are attracted by the fascinations and excitements of the life outside the family circle. The Bible is not read as it used to be in the family. It is not memorized as it was. The habit of family prayer is not as common as it used to be; and even where family prayers are offered, the reading of Scripture is too often perfunctory. There is no real study of the Bible in the home. In many houses the Bible is not opened except on Sunday, and in many, alas, scarcely then. Even private devotions, in these days of

rush and worry, are curtailed. There is little of systematic private Bible reading and study.

Very little has been done to meet the change in family life. The day school, even when the Bible is read, does not do so. The Sunday-school is an invaluable helper, but at the best it supplies only one-half hour of Bible study in the week; while the teachers are often incompetent and the methods most superficial. The pulpit does not do the work it should do in relation to Bible study. The majority of sermons are built upon the slenderest Biblical foundation.

They are often hortatory or rhetorical. Few are expository. The pulpit is thus robbed of its chief strength and attraction, while it fails to utilize its grandest opportunity for the furtherance of the divine truths, and the building up of the people in a sound and accurate knowledge of the Scriptures. These are among the chief causes of the prevailing ignorance of the Scriptures, and to a large extent they indicate the nature and source of the remedies which must be applied. But these we must leave for future discussion.—*The Christian Guardian*.

TOO MUCH LEARNING.

[At Girton College the Gamble Prize for 1894 has been adjudged to the writer of an essay "On Singular Solutions of Differential Equations of the First Order, and the Geometrical Properties of Certain Invariants and Co-variants of their Complete Primitives."]

He had met her at a scientific conversation,
And she listened to his prattle with politeness cold and stony;
Tho' he tried all sorts of topics—pictures, music, books, and Irving,
Still she answered in a manner that was really quite unnerving.

But she thawed like snow in summer,
and became almost ecstatic,
When he touched upon a subject which was purely mathematic;
And she beamed upon him sweetly with a smile of approbation
At the mention of a subtle geometrical equation.

It was not a simple problem, so this clever maiden stated,
For it bristled with co-ordinates immensely complicated;
And she carefully explained to him a singular solution;
While he listened like a martyr on the eve of execution.

She enlarged upon invariants—their primitive completeness
In a differential aspect—with lucidity and neatness;
And she lightly sketched the essay that had won her a diploma;
While her victim stared insanelly, in a state of partial coma.

She proceeded to consider the complete investigation
Of the action of the axis of a vortex in rotation,
And she told him all the theories with which she was acquainted;
But her eloquence was wasted—for the poor young man had fainted.

—*The School Guardian*.

ASTRONOMICAL NOTES.

BY THOS. LINDSAY, TORONTO.

The eclipse of the moon, March 10th, was very widely observed, and many interesting notes made of the varying hues of the disc when totally immersed, occultations of faint stars in the path, etc. Total disappearance of the moon when in the shadow has been but rarely recorded; nor is the explanation very satisfactory which is offered to account for the possibility of the phenomenon: If the atmosphere were everywhere charged with vapour, the rays of sunlight would be all absorbed, the red, which ordinarily, easily gets through, as well as the blue and other rays. We cannot readily believe, however, that the atmosphere would at any time be so completely vapour laden. During April Saturn reaches opposition with an angular diameter of 17 seconds of arc. On the evening of the 23rd, when the planet is directly opposite the sun, the largest satellite Titan, easily visible in almost any telescope will be seen at greatest elongation west of Saturn. The very rapid motion of Mars across the heavens brings the planet very near to Jupiter on the evening of April 25th. With a low magnifying power on the telescope they will be seen in the same field. Jupiter is now in the constellation Gemini and in a region where the stars are very numerous. The planet will frequently appear to have five moons by the near approach of a faint star.

Venus is most conspicuous in the evening sky and the excess of brightness over Jupiter or Sirius is readily seen, although she is far from being at her greatest brilliancy. Venus forms a beautiful picture with the young moon on the evening of April 27th.

In the sidereal heavens we find

Sirius and the brilliant Orion well to the westward at sunset, while the great yellow star Arcturus is becoming a conspicuous object in the east. This star has probably given rise to more sensational reports than any other stellar object. In 1890 very elaborate observations were made at Harvard with the view of determining, if possible, the parallax of Arcturus.

The published result placed it at an enormous distance from the solar system and this, combined with its brilliancy, assuming the same intrinsic lustre as the sun has, gave an actual diameter for the star which would fill the whole distance from the earth to the sun. Much as we may admire the delicacy of astronomical measurements, we can scarcely credit that any instruments have been constructed or observations conducted which would allow the astronomer to confidently say he had measured an arc of the one-fiftieth part of a second, as was reported in the case of Arcturus. The general opinion, calmly expressed by the most experienced observers, is that, less than one-third of a second, all observations for parallax are unreliable. This means a distance of about ten years of light travel and this distance we are perfectly safe in naming as the least possible for Arcturus. Even this would give the star a diameter five times that of the sun, and a mass, possibly, 125 times as great. The very great velocity of Arcturus through space is more readily demonstrated and offers field enough for speculation. There seems to be no explanation offered of the astounding velocities with which some of the stars are endowed, except that they came so from the hand of the Creator, *ab initio*.

NOTES FOR TEACHERS.

STUDY AS AN ART.—It is an art to know how to study. Many a good student lacks the power of teaching this art to others. One of the most complimentary things that a discriminating parent said of a certain teacher was that she had taught a little girl how to study. Progress made by that same child in a subsequent school year could not be so easily traced to the subsequent teacher as to her who had originally showed the child how to go about the art of study. Is not this an art which teachers think too little about? A philosopher said that the best thing that a university can do is to put the student in possession of the keys of the library. And an editor once said to one whom he was about to engage as an assistant,—and who was fearful of his own limitations of knowledge,—“You may not know all about this or that, but you know how to go about looking it up.” Many a one has a dictionary or a concordance to the Bible; but too large a proportion of such persons will sit down and wonder how they can find out the simplest facts, which are plainly set forth in volumes within sight, while they despair over their ignorance.—*The Sunday School Times.*

READING ALOUD IN THE FAMILY.—

It is a pleasant practice to read aloud by turns some book entertaining to all. A quarter of an hour at breakfast and perhaps half an hour when the little ones are in bed may often be agreeably spent in this way.

The kind of conversation that goes on at table and round the fireside is one of the great means of developing the intelligence of children. To be brought up in a family where the talk is mainly upon business and gossip and things out of the newspapers is nothing short of a calamity.

It is good that the children should learn to love books. Not only should they know how to get information from books but they should know how to get pleasure out of them. I would teach a child some respect even for the visible printed page. The good books of the household should be bound in a durable and attractive style. They should be carefully handled, not dog's eared or thumb-marked or scorched by being held against the fire. When the young ones, grown up into men and women, think of the tea-table or fireside of the old home, let them associate with the bright hearth and lamp and the hissing urn the reading that taught and amused them.—*The Journal of Education.*

MORAL ENLIGHTENMENT.—Sometimes the apt use of a proverb will do more to throw moral enlightenment on an act than the most lengthy of lectures. There is no better way to impress a moral lesson on the mind than by taking hold of such an opportunity and using it. Let an act suggest the proverb. It will give inspiration to the corrections and advice that will come later to apply the proverb to the act. It is the best way to develop a moral insight into actions. The pupils' understanding of the proverb should be first evolved from their own ideas of the action, and the proverb should be used so as to show its application to the deed.

The terseness, conciseness, and peculiar fitness of the proverb make an impression on the mind that is lasting. A great educator has said of proverbs that “they serve as pegs in the memory, to which long chains of moral reflection can be attached.”—*The New Education.*

PUBLIC OPINION.

THE NEW REGIUS PROFESSOR.—Lord Acton, one of the most learned of living Englishmen, who succeeds Sir John Seeley as Regius Professor of Modern History at Cambridge, is, according to the *Times*, probably the first Roman Catholic who has held high office in either of our national Universities since the days of James II. Lord Acton was a pupil of Cardinal Wiseman and of Professor Dollinger, of Munich, the expounder of the "old Catholic" faith, and has distinguished himself as an ecclesiastical controversialist in assaults upon the doctrine of Papal infallibility. He is an intimate friend of the late Prime Minister—he gave him his peerage—and a Lord-in-Waiting; besides sharing with Mr. Gladstone and Professor Herkomer the distinction of being an honorary Fellow of All Souls. The appointment seemed to come somewhat as a surprise to most people, but, in view of the general belief that both Mr. Lecky and Mr. Gardiner would decline the office, as they have previously refused the Oxford chair, it has been received with very general satisfaction.—*The Educational Times*.

THE EFFECTS OF INTENSE COLD UPON THE MIND.—Extreme cold, as is well known, exerts a benumbing influence upon the mental faculties. Almost every one who has been exposed, for a longer or shorter period, to a very low temperature has noticed a diminution in will power, and often a temporary weakening of the memory. Perhaps the largest scale upon which this action has ever been studied was during the retreat of the French from Moscow. The troops suffered extremely from hunger, fatigue and cold—from the latter perhaps most of all. A German physician who accompanied a detachment of his countrymen, has

left an interesting account of their trials during this retreat. From an abstract of this paper by Dr. Rose, in the *New Yorker Medicinische Monatschrift*, we find that of the earliest symptoms referable to the cold was a loss of memory. This was noted in the strong as well as those who were already suffering from the effects of the hardships to which they had been exposed.

With the first appearance of a moderately low temperature (about five degrees above zero Fahrenheit), many of the soldiers were found to have forgotten the names of the most ordinary things about them, as well as those of the articles of food for the want of which they were perishing. Many forgot their own names and those of their comrades. Others showed more pronounced systems of mental disturbance, and not a few became incurably insane, the type of their insanity resembling very closely senile dementia. The cold was probably not alone responsible for these effects, for a zero temperature is rather stimulating than paralyzing in its action upon the well fed and the healthy. These men were half-starved, poorly clad, worn out with long marching, many already weakened by dysentery and other diseases, and all mentally depressed, as an army in defeat always is. It needed, therefore, no very unusual degree of cold to produce the psychic effects observed under other circumstances only as a consequence of exposure to an extreme low temperature.—*New York Medical Record*.

PROF. BLACKIE.—John Stuart Blackie, formerly Professor of Greek at the University of Edinburgh, died there on March 2. He was born at Glasgow in 1809, and educated at Aberdeen, Edinburgh, Gottingen,

Berlin and Rome. In 1834 he published his well-known metrical translation of Goethe's "Faust," of which a new edition has been recently issued, and was admitted to the Edinburgh bar. The law was not his province, however, and he began to contribute articles on German literature to *Blackwood's* and *The Foreign Quarterly Review*, the first of an almost innumerable quantity of papers wherewith he enriched periodical literature during his long and brilliant life. In 1841 he accepted the call to the newly established Chair of the Humanities in Marischal College, Aberdeen, occupying that position until 1852, when he was elected to the professorship of Greek at the Edinburgh University, which he resigned in 1882. He was a powerful factor in the promotion of educational reform, and gave his aid to the agitation that culminated in the remodelling to the Scotch universities in 1859. A typical representative of his race in face and mind, in dry humor and shrewdness, he was appropriately the champion of Scotch nationality. Modern Greek and the study

of Gaelic, also, were objects of his unwearying solitudes, and he succeeded during 1874-76 in raising 12,000*l.* for the endowment of a Celtic Chair in Edinburgh University, a performance of which he was rightly proud. As a popular lecturer, also, he was highly successful.

Besides the translation of "Faust," already mentioned, the long list of his works includes a translation of "The Lyrical Dramas of Æschylus" (1850); "Lays and Legends of Ancient Greece with Other Poems" (1856); "Lays of the Highlands and Islands" (1872); "The Language and Literature of the Scottish Highlands" (1876); "The Wise Men of Greece" and "The Natural History of Atheism" (1877); "Lay Sermons" (1881).—*The Critic*.

STATE EDUCATION.—Popular ignorance with popular suffrage would be fatal to the community. This puts State education not on Socialistic grounds but on that of political necessity, and necessity, whether political, military or sanitary, must be supreme.—*Goldwin Smith*.

GEOGRAPHY.

Italy yields the finest coral.

Platinum wires made white-hot by electric currents are now used as saws for felling trees.

Thorghatten, the famous Norwegian mountain, has a hole extending entirely through it from one side to the other.

There are 700 species of birds in South America, of which nearly 300 are peculiar. The turkey and the mocking-bird belong to the latter class.

Greenland, more than 1,400 miles long, is probably the largest island in the world; some geographers think it is a cluster of islands frozen together.

At Grass Lake, near Chicago, and in the Tolleston marsh in Indiana, grows the genuine Egyptian lotus, not found elsewhere in America. The leaf is as large as a hat, and supported at some distance above the water by a round stem. This leaf, when wet resembles liquid quicksilver. The great lily-shaped flower is bright yellow, and in masses is a beautiful sight.

ROCKING STONES IN CONNECTICUT.—A number of Yale students have found several rocking stones near the Stonington, Conn. These stones, which in many cases are as large as small

houses, are supposed to have been brought down from the north by floating ice-bergs, during the glacial period. One of these stones weighs seventy-five tons, and is so evenly balanced that it swings through an arc at the top of the stone of eight inches. It can be moved with a slight pressure of the hand

MAMMOTH CAVE, the largest in the world, near Green River, Kentucky, has been explored ten miles. About twenty rooms have been discovered, and here are found subterranean streams, waterfalls, and pits of unknown depth. Several of the rooms are of great extent, and have received appropriate names. The Haunted Chamber is two miles long, twenty feet high, and ten feet wide, the roof being supported by beautiful pillars.

One apartment is assigned to the evil spirit, where he has a dining-hall, forging-shop, etc. In one place there is a considerable stream, in which there is a species of fish without eyes.

GOLD-BEATING.—The gold-beating is threatened with extinction by the Swan process of preparing gold leaf. This consists of depositing a thin coating of gold upon a copper base, and then dissolving the base by submission to perchloride of iron. It is stated that the leaf may by this means be made of the thickness of 1-4,000,000,000th of an inch. The copper being ultimately recoverable, the process is reported to be in every way economical, the reduction of weight in the leaf effecting a further saving of 80 per cent. of the precious metal.—*Invention, London.*

EDITORIAL NOTES.

Wanted—the Nos. for the year 1885 of C. E. M., for which we will give bound volume of any other year. Address the Canada Educational Monthly, Box 2675, Toronto.

A copy of the "Canada Educational Monthly" for April, 1889, is required by one of our subscribers to complete the volume. Any one who will send a copy to this office will confer a favour.

The National Educational Association of the United States, meets this year at Denver, Colorado, on July 5-12. The President is Dr. Butler of Columbia, and the meeting will be one of great interest and importance.

We are glad to hear that "The Women's Globe," of April 18th, is to have an Educational Department un-

der the charge of Miss Mary Carty. We are sure that our readers will find what may appear in this department, as well as in the rest of the paper, well worth their attention.

PROFESSOR BLACKIE.

It was Education in its broadest sense that Professor Blackie loved and lived for. He had little sympathy with machine methods and soulless teachers. He often said: "The original and proper sources of knowledge are not books but life, experience, personal thinking, feeling and acting." He was not known to say unkind things, hint unworthy motives, or fail to try to see the best side of anyone. He used to write a text from the Greek New Testament in his diary every night and make it his motto for the next day. *Requiescat in pace.*

SCHOOL REPORT.

The annual report of the Minister of Education for 1893, with statistics of 1892, is published. Just a word or two about the teachers' certificates. The report makes it known, that we have in Ontario only 261 first-class teachers, the same number in 1893 as in 1892; 3,074 second class, 27 more in '93 than in '92—we are pleased to see that the number is not less than in the previous year; 4,259 third class, 40 less than in '92; and a fourth class nondescript, except by the term; other certificates 1,053, nearly 200 more than in '92. How is this last class of certificates made up? The kindly banner of the "Old Country Board" certificate was in days not long past used to cover this fourth grade of certificates. We have lively and affectionate regard for the "Old Country Board" and regret that so few of the veterans who held them can now be found.

We confess to have serious doubts about this fourth grade of teachers. We hope that the Minister will be able,

when the estimates are under discussion, to give the country a clear explanation of the causes contributing to the abnormal growth of this nondescript grade of teachers. Whatever the explanation may be, we can say now they cannot be satisfactory to the educators of Ontario. The total number of teachers reported is 8,647, and of this number considerably more than half, viz. 5,312, hold the lowest grade of certificates. Changes as suggested in the report, which, if carried out fairly, may result in relieving the country from the grip of an ill equipped and immature force of teachers. This showing cannot be satisfactory to the Minister, to the Country nor to the educators of Ontario. It is high time to adopt such active measures as will remedy this state of matters. Other measures, not less effective than those set forth in the report, can easily be named, and should be applied with as little delay as possible. The Minister gives much interesting and valuable information about our schools in his annual report.

SENIOR LEAVING ALGEBRA.

BY PROF. N. F. DUPUIS, QUEEN'S COLLEGE, KINGSTON.

(Continued from last issue.)

7. (a) Give a general statement of the binominal theorem.

$$(1+x)^n = 1 + nx + \frac{n(n-1)}{1.2} x^2 + \dots + \frac{n(n-1)\dots(n-r+1)}{r!} x^r \dots$$

Prove it for positive integral exponents.

$$(1+ax)(1+bx)(1+cx)\dots(1+nx) = 1 + x \sum a + x^2 \sum ab + x^3 \sum abc + \dots + x^n abc\dots n.$$

Now $\sum ab$ contains as many terms as there are combinations of 2 letters out of n ; and, similarly, $\sum ab\dots r$ contains as many terms as there are combinations of r letters out of n .

Making, then, $a=b=c=\dots=n$ we have

$$(1+x)^n = 1 + nx + {}^n C_2 x^2 + {}^n C_3 x^3 + \dots + {}^n C_n x^n = 1 + nx + \frac{n(n-1)}{1.2} x^2 + \frac{n(n-1)(n-2)}{1.2.3} x^3 + \dots$$

(Dupuis' Algebra, art. 186.)

(b). Find the co-efficient of x^n in the expansion of $\frac{1+x+x^2}{1-2x+x^2}$.

This is $(1+x+x^2)(1-x)^{-2} = (1+x+x^2)(1+2x+3x^2+\dots(n-1)x^{n-2}+nx^{n-1}+(n+1)x^n+\dots)$

And the co-efficient of x^n is $n-1+n+1$, or $3n$.

This may also be done as follows, and, although not so convenient in this particular case, the expansion might be more convenient in many cases.

$$\frac{1+x+x^2}{1-2x+x^2} = \frac{1-x^3}{(1-x)^2} = \frac{1-x^3}{(1-x)^3}$$

$$= (1-x^3)[1+{}^3h_1x+{}^3h_2x^2+\dots{}^3h_{n-3}x^{n-3}+\dots{}^3h_nx^n+\dots]$$

And the co-efficient of x^n is ${}^3h_n - {}^3h_{n-3}$.

Where rh_r = the number of homogeneous products of r dimensions which can be made from p letters

$$\text{Then } {}^3h_n = \frac{(n+2)!}{2 \cdot n!} = \frac{1}{2}(n+1)(n+2)$$

$${}^3h_{n-3} = \frac{(n-1)!}{2(n-3)!} = \frac{1}{2}(n-1)(n-2)$$

∴ Co-efficient = $\frac{1}{2}[(n+1)(n+2)-(n-1)(n-2)] = 3n$

(c). If $(1+x)^n = 1+c_1x+c_2x^2+\dots+c_nx^n$, show that

$$1-c_1^2+c_2^2-\dots-c_n^2=0, \quad n \text{ being an odd integer.}$$

If $(1+x)^n = 1+c_1x+c_2x^2+\dots+c_nx^n$, then $(1-x)^n = 1-c_1x+c_2x^2-\dots-c_nx^n$

The co-efficient of x^n from the product of the right-hand members is

$$1^2-c_1^2+c_2^2-c_3^2+\dots-c_n^2.$$

And from the product of the left-hand members it is the co-efficient of x^n in $(1-x^2)^n$. But if n is odd, this co-efficient is zero, since the expression contains only even powers of x . ∴ $1^2-c_1^2+c_2^2-c_3^2+\dots-c_n^2=0$.

8. A mortgage of A dollars bearing interest at a per unit per annum, payable yearly, has b years to run. Find its present value, money being worth r per unit per annum, payable half yearly.

If the payments of interest on the mortgage be deposited in a bank until the b years are up, and the present value be deposited for the same length of time, the accumulated sums should be the same in each case. And in justice we must treat the interest payments as present money deposited at compound interest at r per unit payable half yearly.

The last payment of interest amounts to Aa .

The payment before the last " " $Aa(1+r/2)^2$.

The first payment amounts to $Aa(1+r/2)^{2b-2}$.

∴ The whole deposit of interest at the end of b years is

$$Aa[1+(1+r/2)^2+(1+r/2)^4+\dots+(1+r/2)^{2b-2}] = aA \cdot \frac{(1+r/2)^{2b}-1}{(1+r/2)^2-1}$$

And adding the face of the mortgage, which is payable with the last payment of interest, we have, for the sum accruing from the mortgage,

$$A \left\{ 1 + a \cdot \frac{(1+r/2)^{2b}-1}{(1+r/2)^2-1} \right\}$$

And if V be the present value, its accumulated value at the end of b years is $V \cdot (1+r/2)^{2b}$.

$$\text{Equating these gives } V = A \left\{ 1 + a \cdot \frac{(2+r)^{2b}-2^{2b}}{(2+r)^2-2^2} \cdot \frac{2^2}{2^{2b}} \right\} \left(\frac{2}{2+r} \right)^{2b}$$

SCIENCE.

EDITOR—J. B. TURNER, B.A., Col-
legiate Institute, Hamilton.

I.

QUESTIONS IN CHEMISTRY.

The following questions will assist in reviewing chapters XI-XVI in High School Chemistry :

1. Describe the preparation of charcoal and explain why a closed vessel should be used.
2. Describe experiments to show that charcoal will (1) absorb a gas (2) act as a reducing agent.
3. Explain how each of the oxides of carbon may be changed into the other. What changes in volume take place as one oxide is converted into the other.
4. Explain by equations the combustion of carbon monoxide, olefiant gas and methane.
5. During the combustion of Ethylene in a long cylinder carbon is deposited on the mouth of the tube, account for this.
6. From the equations representing the complete combustion of Ethylene and Methane, deduce the volume of oxygen necessary for the complete combustion of one litre of each of these gases.
7. Explain by an equation what takes place when steam is passed over highly heated, powdered charcoal.
8. In the coal gas whose composition is given on page 79, point out

the advantage or disadvantage of each gas present in it.

9. How does the conduct of ethylene and methane towards chlorine differ?
10. How would you convert a non-luminous flame into a luminous one? What inference would you draw as to the cause of the luminosity of a flame? What further experiments would you perform in order to establish the cause of the luminosity of flame?
11. State and illustrate the principle of the Davy Lamp.
12. Give a set of experiments with which to demonstrate that different substances have the temperature of ignition different.
13. How would you distinguish the gases which have been dealt with in the text previous to chapter XVI?

II.

ELECTRIC BATTERIES.

JAMES GILL, B.A. Physical Master,
Hamilton Collegiate Institute.

The following schedule of the different kinds of electric batteries enables the pupils to very readily familiarize themselves with the different parts of each. The Leclanche and Daniell Batteries are given in addition to those mentioned in the text book. The first two batteries in the schedule are single-fluid cells, the remaining five are two-fluid cells.

NAME.	POSITIVE PLATE.	NEGATIVE PLATE.	FLUIDS.	MEANS TO PREVENT POLARIZATION.	USES AND REMARKS.
Smce....	Zinc....	Silver (or lead)....	Dilute Sulphuric Acid.....	Coat of Platinum on silver Hydrogen bubbles do not adhere readily	Given as an example of mechanical means of preventing Polarization...
Grenet....	"	Carbon...	Bichromate of Potassium and Dilute Sulphuric Acid...	Bichromate	Generally used in laboratory experiments...
Leclanche.	"	"	Solution of Sal Ammoniac	Small pieces of carbon packed with carbons in porous cup along with bin-oxide of Manganese.....	Telephone and electric bells and to limited extent in telegraphy
Gravity....	"	Copper...	Solution of Copper Sulphate..	Practically no polarization..	Telegraphy.....
Gronc.	"	Platinum.	Strong nitric acid and dilute Sulphuric acid	Nitric Acid....	Used where steady strong current is required for some time.
Bunsen...	"	Carbon...	"	"	"
Damill....	"	Copper...	Solutions of Copper Sulphate and dilute Sulphuric Acid.	No Polarization so long as copper sulphate solution is saturated	Telegraphy in England

EXAMINATION PAPERS IN ENGLISH LITERATURE.

By C. CLARKSON, B.A., Principal Seaforth Collegiate Institute.

Primary—Dec. 1894.

1. Give a general account of "The Bard," and point out the symmetry of the versification

2. Quote the passages which allude to Q. Elizabeth, and show the aptness of the references.

3. "Fair laughs the morn, etc." What does this mean? What are the figures? Refer to the historical facts.

4. Make a list of the bards, the sovereigns and the places mentioned or alluded to in this poem. Quote the lines you like the best.

5. Give a list of the dramatic personages in the "Trial Scene," and in a few words hit off the general character of each. Who were Pythagoras, Barrabas, and "The gentleman that lately stole his daughter?"

6. "Why doth the Jew pause?" Explain fully the drift of this question.

7. Make a list of words that have changed their accent since Shakespere wrote; and explain the allusions in the lines:—"Enough to press a roya

merchant down;" "From which lingering penance . . . doth she cut me off;" "Your wife would give you little thanks, etc."

8. Quote "The Cloud." Mark the scansion of the last number (vi).

9. Explain the words genii, crimson pall, pavilion, cenotaph meteor.

10. Tell in your own words the general import of this poem. Select what you consider the best passage.

Senior Leaving—Philology—Dec.

1894.

1. State Grimm's Law generally, and also in concise mnemonical form. Apply this law to discover the Saxon words corresponding to the classical words *haus*, *hortus*, *ther*, *fagus*, *frater*, *gnosco*, *genus*, *magnus*, *dent-is* and *thugater*.

2. In a tabular form exhibit the members of the Aryan family of languages. What European languages are not Aryan? Mark the dead languages in your table.

3. By means of examples bring out the exact force of the terms *Ablant*, *Umlant Enclitic*, and *Symphitism*.

4. Write a note explanatory of the origin of *am*, *was*, and *be*.

5. What are the four periods of the Latin element? Give examples of each.

6. Point out in as many ways as you can the dominant influence of French on the English language, dwelling fully on the expulsion of the guttural "ch" or "gh." What substitutes are found in modern English?

7. Make a list of Celtic words found in English, laying stress on geographical names.

8. Give examples of "false analogies" and "blunder spellings."

9. Write a note on "silent letters," give examples, and account for the silent letters.

10. Give the force and meaning of the prefix, the suffix and the root, as

the case demands, in each of the following words, and note the language from which each is borrowed: Lancaster, according, band, ancient, malice, treachery, inveterate, frowning, ourselves, high-stomach'd, sovereign, liege, heavens, earth, immortal, treason, mis-begotten, divine, crystal, arbitrate.

ENGLISH DEPARTMENT.

BY H. I. STRANG B.A.

Passages for Analysis, Parsing, etc.

I. For Senior Leaving, Junior Leaving and Primary.

(a) Alas! for this gray shadow, once
a man—
So glorious in his beauty and thy
choice,
Who madest him thy chosen,
that he seemed
To his great heart none other
than a God!
I asked thee, 'Give me immor-
tality.'
Then did'st thou grant mine
asking with a smile,
Like wealthy men who care not
how they give.
But thy strong hours indignant
worked their wills,
And beat me down and marred
and wasted me,
And though they could not end
me, left me maimed
To dwell in presence of immortal
youth,
Immortal age beside immortal
youth,
And all I was, in ashes. Can
thy love,
Thy beauty, make amends, tho'
even now,
Close over us the silver star, thy
guide,
Shines in those tremulous eyes
that fill with tears
To hear me.

Tennyson—"Tithonus."

NOTE.—See the classical dictionary for the story of Tithonus and Aurora.

(b) But Pallas where she stood
Somewhat apart, her clear and
bared limbs
O'erthwarted with the brazen-
headed spear
Upon her pearly shoulder leaning
cold,
The while, above, her full and
earnest eye
Over her snow cold breast and
angry cheek,
Kept watch, waiting decision,
made reply.
"Self-reverence, self-knowledge,
self-control,
These three alone lead life to
sovereign power.
Yet not for power (power of her-
self
Would come uncalled for) but to
live by law
Acting the law we live by without
fear ;
And, because right is right, to
follow right
Were wisdom in the scorn of
consequence."

Tennyson—"Æneone."

(c) As one that museth where broad
sunshine laves
The lawn by some cathedral,
through the door
Hearing the holy organ rolling
waves
Of sound on roof and floor
Within and anthem sung, is
charmed and tied
To where he stands—so stood I,
when that flow
Of music left the lips of her that
died,
To save her father's vow ;
The daughter of the warrior
Gileadite,
A maiden pure ; as when she
went along
From Mizpeh's towered gate with
welcome light,
With timbrel and with song.
Tennyson—"A Dream of Fair
Women."

*For Public School Leaving and
Entrance.*

(a) Branches they have of that en-
chanted stem,
Laden with flower and fruit,
whereof they gave
To each, but whoso did receive
of them
And taste, to him the gushing of
the wave
Far, far away did seem to mourn
and rave
On alien shores ; and if his fellow
spake,
His voice was thin, as voices from
the grave ;
And deep asleep he seemed, yet
all awake,
And music in his ears his beating
heart did make."

Tennyson—"The Lotos Eaters."

(b) So shape chased shape as swift as,
when to land
Bluster the winds and tides the
self-same way,
Crisp foam-flakes send along the
level sand,
Torn from the fringe of spray.
I started once, or seemed to start,
in pain,
Resolved on noble things, and
strove to speak,
As when a great thought strikes
along the brain,
And flushes all the cheek.
(c) Losing her carol I stood pensively,
As one that from a casement
leans his head,
When midnight bells cease ringing
suddenly,
And the old year is dead.

Tennyson—"A Dream of Fair
Women."

ANSWERS TO CORRESPONDENTS.

Having been asked to exemplify
what I consider the best forms to use
in writing out analysis and parsing, I
give those agreed on by a joint Com-
mittee a few years ago for adoption
by the teachers of Huron. They are

substantially the same as I had previously used for many years, and I have found them full enough and flexible enough for all grades of examinations, from Entrance to Senior Leaving.

I take for illustration the last extract given above, and assume the following questions to have been asked in it:—

(a) Divide the extract into clauses, write out each in full, and tell its kind and relation.

(b) Give the detailed analysis of each clause.

(c) Parse the words *losing*, *carol* *stood*, *as*, *one*, *that*, *from*, *ringing*, *suddenly*, *and*, *dead*.

(a) Clause 1. I losing her carol, stood pensively. Kind and Relation. Principal, assertive.

Clause 2. As one (stands.) Kind and Relation. Sub. adv. of manner modg. *stood* in cl. 1.

Clause 3. That from a case-ment leans his head. Kind and Relation. Sub. adj. q. *one* in cl. 2.

Clause 4. When midnight bells cease ringing suddenly. Kind and Relation. Sub. adv. of time, mody *leans* in cl. 3.

Clause 5. (When) the old year is dead. Kind and Relation. Sub. adv. coord to cl. 4.

(b) I. Subject (Bare, simple, or Grammatical). II. Attributive modifiers of subject. III. Verb, or Verb phrase. IV. Predicative modifiers of Subject (Subjective complements.) V. Direct object with its modifiers. VI. Adverbial modifiers of III.

Clause 1. I, I II. losing her carol III. stood, VI. pensively.

Clause 2. I. One, III. (stands).

Clause 3. I. that, III. leans V. his head, VI. from a casement.

Clause 4. I. bells, II. midnight, III. cease, V. ringing, VI. suddenly, when.

Clause 5. I. year, II. the, old, III, is IV. dead, VI.

(c) *Losing*—pres. (imperfect) part-ple. q. *I*.; *carol*—noun com. neu. sing. obj. gov. by *losing*; *stood*—inte. verb, old conjug. (*stand*, *stood*,) indic. past, 1st. sing. to agr. with its sub. *I*; *as*—subordg conj. connecting clauses 1 and 2; *one*—indef. pron. sing. nom. subj. of (*stands*); *that*—rel. pron. having *one* for its antec. and nom. subj. of *leans*; *from*—prep. showing rel. bet. *leaves* and *casement*; *ringing*—ground, obj. gov. by *cease*; *suddenly*—adverb mody. *cease*; *and*—coordg. conj. coupling 4 and 5; *dead*—pred. adj. q. *year*.

HINTS AND NOTES FOR YOUNG TEACHERS.

Teach your pupils—

1. To distinguish clearly between (a) phrases and clauses; (b) between *Finite* (Indic. Subj. and Imperat.) and indefinite (Infinitives and Participles) forms of the verb, and to see that there must be as many clauses as there are finite verbs expressed or necessarily understood.

2. To see that if they can arrange the words on their natural prose order and express the thoughts fully, supplying ellipsis where necessary, most of the difficulties in analysis and parsing will disappear.

3. To look out for ellipsis after certain words, such as *than*, *as*, *though*, *but*, *and*, and to remember that the words supplied must (a) make good English, (b) not displace any of the words in the passage, (c) make the best possible meaning to be got from the passage, (d) be put in a parenthesis, to show that they have been supplied.

4. Subordinating conjunctions should be written with their clauses; co-ordinating conjunctions, when connecting clauses, do not form part of either.

5. While the subdivisions for detailed analysis are sufficient for all

ordinary purposes, it is not pretended that everything that may be found in sentences can be satisfactorily disposed of in one or other of the 6 positions. Phrases of address, or any exceptional irregularities of construction are best disposed of by appending a note in regard to each.

6. Don't waste time and destroy interest by letting analysis and parsing degenerate into mere rote work. In most passages there are only a few clauses phrases and words that should present difficulty to a properly trained class. Devote your attention to these, and try to get pupils to see as quickly as possible what are the words, which, if properly disposed of, will give the key to the whole. It is better for students to think out the whole passage before they answer on paper a single question on it. They will be less likely then to give inconsistent and absurd answers, or to have to go back and correct mistakes.

QUESTIONS ON CÆSAR.

BOOK V. CHAPTERS 27-31.

By H. I. STRANG, B. A.

I. Translate into English, direct narration, chapter 27: *Civitati porro consulat.*

1. Name the speaker and state his object.

2. *Id se facile.* For what does *id* stand?

3. *Imperitus rerum.* Name 4 other Latin adjectives (giving the meaning of each) followed by the genitive.

4. *Alteræ.* What peculiarity of this word?

5. *Quibus.* What difference between Latin and English is illustrated by the use of this word here?

6. Distinguish *consulere alicui* (aliquem).

II. Translate in indirect narrative, chapter 29: *Postremo quis—timenda.*

1. Parse *durius eorum.*

2. Change from *suam, sententiam* to *salutem* to *oratio recta, quis persuaderet, quem exitum habere.* What kind of questions? Account for the difference in mood.

3. Give gen. sing. and gen. pl. of "utramque partem," "quem exitum," "praesens periculum."

III. Translate into good idiomatic English.

(a) *Ipsorum esse consilium velintne priusquam finitimi sentiant eductos ex hibernis milites ad Ciceronem deducere.*

(b) *Quid esse levius aut turpius quam auctore hoste de summis rebus capere consilium?*

(c) "Vincite," inquit, "si ita vultis, neque is sum qui gravissime ex vobis mortis periculo terrear; hi sapient; si gravius quid acciderit abs te rationem reposcent."

1. Who is the speaker in *c.* State the circumstances under which he is speaking.

2. Rewrite *c* in *oratio obliqua.*

IV. (1) What part of what verbs are *consuerat, affore, ausam, velint.*

(2) Give perfect indicative of *confiteri, confidat daturum, maneunt.*

(3) Mention any peculiarity of *filius, sponte, iurejurando, proximi.*

V. Give idiomatic Latin phrases for: "To speak as follows," "to deliver a speech," "to have more power over them," "to feel persuaded of this," "to hold us to account," "to prolong the discussion," "to set out at daylight," "We all think alike," "to regard our own interests rather than yours," "My friends and those of my brother."

EXAMINATION PAPERS IN
ENGLISH LITERATURE.

By MISS H. CHARLES, B.A., Col-
legiate Institute, Goderich.

FORM IV.—CHAUCER.

1. Give in your own words Chancer's description of the circumstances under which the pilgrimage was undertaken.

2. Enumerate the personal qualities and accomplishments of the Knight, the Monk, and the Clerk.

3. Relate what Chancer gives of the previous history of the Friar, the Franklin, and the Shipman.

FORM IV.—RICHARD II.

1. Describe the character of Busby and Green :

(a) As they are represented by the other personages in the play.

(b) As they appear from facts in the play.

2. Describe the character of Richard as it appears in Acts I. and II.

3. What was the object of the introduction of the last scene, Scene IV. of Act II.

FORM III.—MORTE D'ARTHUR.

Describe the finding and the disappearance of Excalibur.

2. " Ah, miserable and unkind, untrue,

Unknightly, traitor-hearted !"

Describe the case of Sir Bedivere and the sword with reference to what the king says above.

3. Quote or refer to any parts of the *Morte d'Arthur* that you think pathetic, giving your reasons for so thinking.

4. (a) What was the ultimate fate of the Round Table.

(b) What were Arthur's reflections on its fate?

FORM II.—THE FIRST HALF OF
THE TRIAL SCENE AND KEAT'S
SONNETS.

1. Relate briefly what takes place in the court before the appearance of Portia.

2. Explain the fact of Portia's appearance in the court.

3. (a) Quote Shylock's speech beginning "What judgment shall I dread, doing no wrong?"

(b) Give in your own words the arguments he uses.

4. Relate the story of the signing of the bond.

5. Describe fully the two pictures in "The Grasshopper" and "The Cricket."

CONTEMPORARY LITERATURE.

The *Century* have been most fortunate in their choice of Napoleon as a subject, the public testifying their interest in an unmistakable manner. The March number carries out the promise of earlier instalments of the history. Mrs. Harrison's and Marion Crawford's stories are, each in its own particular way, absorbingly interesting. There is a charming southern short story, by Harry Stillwell Edwards, entitled "The Hard Trigger," illustrated by Kemble. "A Vital

Question" shows Mr. Hibbard at very great advantage if not at his best. H. E. Krehbiel contributes a short sketch of the musician Ysaye, and H. C. Bunner an article on "Cheating at Letters."

Those who had any doubt about the possibility of repeating the Jungle stories will be more than satisfied by the "King's Ankus" in the March *St. Nicholas*. Mowgli is just the Mowgli of the former book and saying that one can wish no more for him.

The serials are all excellent. If one might choose, the "Girls' College Story" is perhaps more uncommon and for that reason more interesting than the others. Brander Matthews contributes a sketch of "Hawthorne," and Ensign Ellicott, of the U. S. Navy," explains signalling with flags.

"Decorations for a Dining-Room," by Miss Elizabeth B. Sheldon, is the leading article in the March *Table Talk*. There is also an interesting account of the "Progress of Domestic Science at Farmers' Institutes." The various departments are complete and most useful.

"The Seats of the Mighty," which is begun in the March number of the *Atlantic*, is a new story by Gilbert Parker and promises to excel anything yet written by the promising young author. The scene is laid in Quebec at the time of its capture by the English and the hero is an English officer imprisoned there. Elizabeth Stuart Phelps' story is well sustained in interest and plot. Bliss Carmen has a poem entitled, "At the Granite Gate." J. J. Trowbridge contributes "Some Confessions of a Novel Writer"

W. Clark Russell is fully up to his best, which in sea stories is saying a great deal, in "A Three Stranded Yarn" which is at present running in the *Cosmopolitan*. The tale is supposed to be related by a young lady sailing in search of health. Lord Wolseley has an article on "The War Between China and Japan" in the February number. There is also a history of "The Ballet," by Rosita Mauri, the Parisian danseuse and a rather painful, but interesting paper on "Salvation via the Rack" by Julian Hawthorne.

"Erasmus and the Reformation from (*Temple Bar*)" and "The Making of a Shrine, (*Nineteenth Century*)" are two of the notable articles in the *Littell's Living Age*, March 16th.

"Rubinstein," by H. R. Haweis, reproduced in the March *Eclectic* from the *Fortnightly Review* is a most interesting and appreciative article which would give pleasure to any one at all attached to music. "An Old Society Wit," by Mrs. Andrew Crosse and "Character Note," "A School Girl from the Corn Hill," are among the other excellent papers.

The March number of the *Scribner's Magazine* is a particularly fine one, containing the first part of a story entitled "A Circle in the Water," by W. D. Howells, and the continuation of Meredith's "The Amazing Marriage." President Andrews begins the first part of a "History of the Last Quarter of a Century in the United States." Robert Grant contributes another of his amusing and instructive papers on the "Art of Living." "Hughey" is a fine short story by Rhodes Macknight. William Wilfred Campbell has a poem entitled "The Last Prayer."

The Board of Education, of the Los Angeles City Schools, has issued three manuals for the teachers of these schools, which are entitled respectively: *Motives*, *Working Directions* and *Music*. Many excellent suggestions are found in these pamphlets.

A second edition of Mr. Alfred S. West's *Elements of English Grammar* has just been issued from the Pitt Press, Cambridge, England. It is, as we have already said, a serviceable book, clear and plain, and exceedingly practical. The questions are good and the definitions and explanations satisfactory.

Lessons in the New Geography is the title of a text-book, recently published by Messrs. D. C. Heath & Co. (Boston), the author of which is Prof. Trotter of Swarthmore College, Pennsylvania. It is not intended as a text-book for elementary schools, but rather as a book full of valuable suggestions to the teacher as to the broad

lines of real geographical study. The order of topics is as follows: "Past and Present Aspects of the Earth," "Climate," "Plants Which Have Affected Man," "Animals Which Have Affected Man," "Man," "Commerce." Each of these subjects is developed in a number of lessons. The book is an interesting one and will be found useful in preparing class-work.

The *Advanced Fourth Music Reader*, by J. M. McLaughlin and G. A. Veazie (Boston: Ginn & Co.), which is intended for use in Grammar and High Schools, contains many good songs and studies. The mechanical execution is excellent.

Alfred de Musset (Boston: Ginn & Co.). We have here portions of the prose and poetical works of Alfred de Musset, selected and edited by L. Oscar Kuhns. The editor is of opinion that more attention should be devoted to the purely literary side of modern language teaching, and has prepared this book in accordance with that view. We have an interesting Introduction, chiefly biographical, and good notes. In the latter, parallel passages are frequently quoted from French and English authors.

Elementary Composition and Rhetoric. By William E. Mead, Ph.D. Boston: Leach, Shewell and Sanborn. This is a brief and practical treatise on Rhetoric and Composition. The author is an experienced teacher and the book is the product of his experience. Great attention is paid to the development of themes, and the arrangement of the matter shows careful work. The examples and exercises are especially good.

School English. By Geo. P. Butler. New York: The American Book Co. This text-book on Rhetoric and Composition contains some thirteen chapters on the subjects usually included in an elementary course in Rhetoric and is remarkable for the number and appropriateness of the examples and exercises. The

chapter on "Figures of Speech" is one of the best in the book. A good many exercises in False Syntax are given, and as an aid to class work it will, we feel sure, be found of considerable value.

From MacMillan & Co., London and New York, through the Copp Clark Co., Toronto:

I. *A First Step in Euclid*. By J. G. Bradshaw, of Clifton College.

II. *Elliptic Functions*. By A. C. Dixon, of Queen's College, Galway.

III. *The Planet Earth*. By R. A. Gregory, F. R. A. S.

It is a "far cry" from "A First Step" to "Elliptic Functions." The former presents, with many illustrations, examples and preparatory steps, the ground covered by the first twelve propositions of the first book of Euclid and is certainly "Euclid made easy." With such a text-book as this Euclid might be commenced at a very early age. But will the "hopeful" ever get to "Elliptic Functions," that is the question. There is a danger in making everything easy. The accomplished author states that the object of the latter work is to supply the wants of students, who, for reasons connected with examinations or otherwise, wish to have a knowledge of the Elements of Elliptic Functions, not including the "Theory of Transformations" and the "Theta Functions." Besides an "Introduction," and an Appendix on the "History of the Notation of the Subject." The writer deals with "The Periods" "The Related Moduli" "Addition of Arguments" "Degeneration of the Elliptic Functions," "Geographical Representation," etc. This is a scholarly and important work.

Prof. Gregory, who is an Oxford University Extension Lecturer, has produced a brief, yet clear and comprehensive introduction to Astronomy and Geography under the title *The Planet Earth*.